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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/554,041	10/12/2000	Martin Lenfers	10191/1376	5483

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EXAMINER

OLSEN, KAJ K

ART UNIT	PAPER NUMBER
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1744

DATE MAILED: 12/07/2001

7

Please find below and/or attached an Office communication concerning this application or proceeding.

ME-7

Office Action Summary

Application No.

09/554,041

Applicant(s)

LENFERS ET AL.

Examiner

Kaj Olsen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 6-12 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 6-12 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> | 6) <input type="checkbox"/> Other: |

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DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 6-12 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The claims are drawn to a probe for determining an oxygen concentration in a gas mixture. In particular, the claims call for a “loaded voltage divider including a plurality of resistors that are arranged such that a negative feedback of a Nernst voltage circuit and of a pump voltage circuit is optimized” (claim 6). The term “negative feedback” as it is conventional understood implies that the output of an amplification stage is fed back into an input of said amplification stage in such a manner that the overall gain of the amplification stage is reduced (see enclosed discussion in Diefenderfer). However, all the applicant has shown in the specification is a configuration of resistors that connect the inner pumping electrode to the Nernst electrode and does not appear to have described anything about the Nernst voltage or pump voltage circuitry which apparently utilizes this configuration to achieve negative feedback. What constitutes the amplification inputs and outputs and how does this configuration of resistors optimize this feedback? Furthermore, what constitutes an “optimized” or “maximized” feedback for the Nernst voltage circuit or pump voltage circuit? The specification is not

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enabling to one possessing ordinary skill in the art concerning these issues. The above quoted passage also sets forth a "loaded voltage divider". Because the specification has not described how the Nernst or pump voltage circuits operate, it is unclear how this circuit constitutes a "loaded" divider. The term "loaded" implies some voltage being applied across a series of resistors from which a *divided* voltage can be picked off of any individual resistors in the series. Because the location of the voltage sources are not set forth in the specification, the specification is not enabling to one possessing ordinary skill in the art about how these elements of the instant invention constitutes a loaded voltage divider. Consequently, one of ordinary skill in the art at the time the invention was being made would not be enabled to make and use the instant invention.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 6, it is unclear if the applicant is claiming the presence of a diffusion barrier on the probe.

In claim 6, the limitations drawn to the "joint supply conductor" are confusing and unclear. For example, the limitations specify that the Nernst electrode and inner pump electrode are connected "at least in some sections". This limitation is vague and the metes and bound of it are unclear. Furthermore, the limitations specify the presence of a "joint supply conductor resistor" that is associated with the Nernst and inner pump electrodes. The examiner is unclear

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what element of the invention this term is referring to. The examiner can find no discussion of a “joint supply conductor resistor” in the specification and it is unclear which resistor the applicant is referring to.

Moreover, claim 6 further recites the presence of a loaded voltage divider including “a plurality of resistors”. This limitation would appear to refer to the combination of resistors R1, R2, and R3 of the figures that apparently constitute the elements of the loaded voltage divider (see 112 1st rejection above). However, if these resistors are set forth as the “plurality of resistors”, then what would constitute the “joint supply conductor resistor” which is claimed as a separate element from the plurality of resistors. Furthermore, is the plurality of resistors and/or the joint supply conductor resistor part of the separately specified “circuit arrangement”? Clarification is requested.

Finally, the limitations drawn to the joint supply conductor are unclear because the cooperation between the various components of the joint supply conductor and the Nernst and pump electrode are not clearly established. The limitations appear to specify a plurality of resistors that are vaguely associated with the Nernst and pump electrodes to arrive at an optimized negative feedback.

In claims 6 and 7, it is unclear what constitutes an “optimized” or “maximized” feedback. In addition, wouldn’t a “maximized” feedback (β in Diefenderfer eq. 7-14 approaching negative infinity) result in complete destruction of the signal?

In claim 10, it is unclear what the metes and bound of the “minimized” cross section of the conductor section is. The term “minimized” is not defined by the claims and the specification does not provide a standard for ascertaining the requisite degree of the term. One

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of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In addition, it is unclear if the applicant even teaches a minimized cross section. First, the specification doesn't appear to teach minimizing the cross section, but rather only teaches reducing it (p. 3, lines 22-23 and p. 7, line 12). Second, it would appear to the examiner that the applicant has not utilized a "minimized" cross section because technology exists which is capable of making conductive filaments of extremely small cross sections, and consequently, extremely high resistances (e.g. filaments typically utilized in ultramicroelectrodes). There is no indication in the specification that the applicant utilizes any of this technology in the instant invention and hence wouldn't appear to constitute a *minimum* cross section.

In claim 11, it is unclear how the specified printed conductor sections and contact point cooperate with the other specified elements of the invention (e.g. the plurality of resistors).

In claim 11, there is no antecedent basis for the term "the cross section of the joint supply conductor".

In claim 12, it is unclear what constitutes being "downstream" from the Nernst and inner pump electrodes. Furthermore, it is unclear what constitutes being "directly" downstream from said electrodes.

In claim 12, it is entirely unclear what the last limitation is referring to. The applicant has not sufficiently define what a "second distance" of the joint supply conductor section even is. Furthermore, it is unclear what the language drawn to a conductor section having a "maximum length" means. The term "maximized" is not defined by the claims and the specification does not provide a standard for ascertaining the requisite degree of the term. One of ordinary skill in the art would not be reasonably apprised of the scope of the invention. In addition, it is unclear

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if the applicant even teaches a maximum length. First, the specification doesn't appear to teach maximizing the length, but rather only teaches increasing it (p. 3, line 31 and p. 7, line 6).

Second, it would appear to the examiner that the applicant has not utilize a "maximized" length because any length longer than what the applicant utilized would constitute a length more "maximized" than what was utilized. Clarification is requested.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Brandt (USP 5,211,154) and Inoue et al (USP 6,136,170) teach the use of negative feedback between the pump and Nernst cells (fig. 3 and 7 respectively). These references do not appear to utilize loaded voltage dividers as part of the negative feedback (however, see 112 rejections above).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (703) 305-0506. The examiner can normally be reached on Monday through Thursday from 8:00 AM-5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Mr. Robert Warden, can be reached at (703) 308-2920.

When filing a fax in Group 1700, please indicate in the header "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communications with the PTO that are not for entry into the file of this application. This will expedite processing of your papers. The fax number for this Group is (703) 305-7719.

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Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0661.

Kaj K. Olsen, Ph.D.



Patent Examiner

AU 1744



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